2025

Limekiln Battery Energy Storage System (BESS)

Appendix 7.1: Ornithology Technical Report

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LIMEKILN BATTERY ENERGY STORAGE SYSTEM (BESS)

ORNITHOLOGICAL SURVEYS IN 2025

Introduction

1. This report describes the ornithological surveys undertaken at the site of a proposed battery energy storage system (BESS) at Limekiln Wind Farm in Caithness in 2025. The surveys were undertaken by Natural Research (Projects) Ltd (NRP).

2. The objectives of these surveys were to:

    - Record and map the breeding bird community within the survey area, and
    - Locate and map any breeding attempts by scarce raptors and owls within the survey area.

Field methods

3. Surveys commenced on 15 April 2021 and were completed on 22 May 2025. The survey area was defined with reference to the location of the proposed BESS Compound Area and Attenuation Basin and encompasses a buffer of 500 meters (m) in radius. The survey area is located in close proximity to Limekiln Wind Farm near Reay, Caithness.

4. Fieldwork was undertaken by Dan Beadle (DWB) and Roddy Mavor (RAM), both experienced field ornithologists

<u>Breeding bird surveys</u>

5. Breeding bird territories were surveyed across the whole survey area. The Common Bird Census (CBC) (Marchant, 1983) method devised for censusing woodland and farmland birds was modified and where possible all parts of the survey area were approached to within 100 m or closer if necessary.

6. All bird species potentially breeding within the survey area or making substantial use of the survey area for foraging, were recorded.

7. The whole survey area was visited four times between mid-April and late May. Fieldwork was avoided in conditions that may have affected bird detection, for example strong winds (greater than Beaufort Force 4), persistent heavy precipitation, poor visibility (less than 300 m), or in unusually hot or cold temperatures (**Table 1**).

Table 1. Breeding bird survey effort and weather conditions.										
Date	**Start time**	**Duration**	**Obs.**	**Cloud (10ths)**	**Cloud base (m)**	**Wind direction**	**Wind force**	**Precip***	**Vis. (km)**	**Visit No.**
15/04/2025	0845	3.00	DWB	6	600	S	1	nil	5	visit 1
26/04/2025	1050	3.00	DWB	10	800	SSE	2	nil	5	visit 2
13/05/2025	0800	4.00	RAM	10	400	NE	3	nil	10	visit 3
22/05/2025	1130	3.00	DWB	6	900	N	3	nil	5	visit 4
Total		**13.00**								
*Precipitation codes: Continuous/Intermittent + Light/Heavy + Rain/Snow/Hail/Fog										

8. The survey aimed to cover the ground systematically with a constant search effort. All suitable ground was approached closely, typically to within 100 m. More open areas such as woodland edges, rides and tracks were examined carefully, and some ditches and streams were followed. The surveyor paused at regular intervals to scan and listen for calling and singing birds.

9. Careful attention was given to recording behaviour indicative of breeding and care was taken to try to avoid counting the same individual more than once. Where necessary, the surveyor retraced their steps in order to check the continued presence of previously recorded birds.

10. The location and activity of birds were mapped onto enlarged 1:25,000 scale OS maps using standard BTO codes (Marchant, 1983). The position of each bird was mapped at the point it was first detected.

11. At the end of each visit, a summary map was compiled showing the location of each identified territory or breeding pair. The following evidence was considered diagnostic of breeding:

    - Song, courtship or territorial display;
    - Territorial dispute;
    - Nest building and hole excavation;
    - Agitated behaviour by adult bird(s) indicating the presence of a nearby nest or young (e.g. repetitive alarm calling, distraction display);
    - Adult(s) carrying food;
    - Presence of newly fledged young;
    - Adult(s) removing faecal sac.

12. Where a number of breeding individuals were present and, after interpretation of the field data it was not possible to determine the exact number of breeding pairs, registrations of individual birds were deemed to represent discrete breeding territories / pairs if the

distance between them exceeded certain distance thresholds: 100 m in the case of small passerines. Whilst it is recognised that this distance is arbitrary and the territory size varies both inter- and intra-specifically, this approach produces a standardised index of abundance based on the distance that members of a breeding pair are likely to move during the survey period. In cases where two individuals were considered to constitute a pair of birds, the location of the pair was placed centrally by convention.

Scarce Raptors and Owls

13. Particular care was taken to search for scarce species of raptor and owl using methodology found in Hardey *et al*. (2013). The following species were considered most likely to occur in the habitats within the survey area; hen harrier (*Circus cyaneus*), merlin (*Falco columbarius*), goshawk (*Accipiter gentilis*), osprey (*Pandion haliaetus*) and white-tailed eagle (*Haliaeetus albicilla*).

Hen harrier

14. Survey methods based on Hardey *et al*. (2013) were followed. Emphasis was given to searching habitats considered potentially suitable for nesting, in this case limited to areas of heath/bog with stands > 0.4m tall and areas of re-stock plantation.

Merlin

15. Survey methods based on Hardey *et al*. (2013) were followed. Within suitable habitats, old crow nests (which could be re-used by merlin), fenceposts, hummocks, bushes and trees were checked for signs of occupation (e.g. plucked prey, moulted feathers, pellets and faeces). Emphasis was given to heath bog habitats with stands of heather >0.4m tall and edges of closed canopy forestry plantations.

Goshawk

16. Survey methods based on Hardey *et al*. (2013) were followed. Checks were made for displaying and calling birds with searches of mature forestry to locate nests.

Osprey

17. Survey methods based on Hardey *et al*. (2013) were followed. Checks were made in areas where mature trees were present for nests and watches made for birds carrying fish or exhibiting territorial behaviour.

White-tailed eagle

18. Survey methods based on Hardey *et al*. (2013) were followed. Checks were made in areas where mature trees were present for nests and watches made for birds carrying food or exhibiting territorial behaviour.

Results and discussion

Breeding birds

19. Breeding bird surveys recorded evidence of breeding within the survey area by a total of fourteen species (**Table 2**). A number of other species were recorded but without any signs to indicate breeding attempts within the survey area, these included buzzard and sparrowhawk.

20. Of the fourteen species confirmed to breed, one is considered to be of high Nature Conservation Importance due to its listing on Schedule 1 of the Wildlife and Countryside Act 1981, and one is considered to be of moderate Nature Conservation Importance due to its classification on the Birds of Conservation Concern (BoCC) Red list (Stanbury *et al.,* 2021). A further five species confirmed to have bred are on the BoCC Amber list. No species listed on Annex 1 of the EU Birds Directive were recorded breeding.

Table 2. Territories recorded during breeding bird surveys.

Species	**Confirmed territories**
Schedule 1 species	
Common crossbill	2
Red listed species	
Lesser redpoll	3
Amber listed species	
Wren	15
Dunnock	4
Song Thrush	3
Meadow pipit	1
Willow warbler	1
Other species	
Robin	40
Goldcrest	36
Chaffinch	31
Siskin	27
Coal Tit	19
Blackcap	1
Woodpigeon	1

Passerines

21. Only one Schedule 1 passerine, common crossbill (*Loxia curvirostra*) and one Red-listed passerine, lesser redpoll (*Carduelis cabaret*), were recorded in very low densities. Of the Amber listed passerines, there were relatively high densities of wrens (*Troglodytes troglodytes*) and low densities of four other species. All the passerine species recorded were typical of commercial forest habitat found across the survey area.

Scarce raptors and owls

22. There was no evidence to indicate the presence of any breeding scarce raptor or owl species within the survey area.

Waders

23. A curlew was recorded in flight over the site, but no evidence of breeding was recorded. No other wader species was recorded.

References

Hardey, J., Crick, H., Wernham, C., Riley, H., Etheridge, B. & Thompson, D. (2013). Raptors, a field guide for surveys and monitoring. The Stationery Office, Edinburgh.

Marchant, J.H. (1983). BTO Common Birds Census instructions. BTO, Tring.

Stanbury, A., Eaton, M., Aebischer, N., Balmer, D., Brown, A., Douse, A., Lindley, P., McCulloch, N., Noble, D., & Win I. 2021. The status of our bird populations: the fifth Birds of Conservation Concern in the United Kingdom, Channel Islands and Isle of Man and second IUCN Red List assessment of extinction risk for Great Britain. British Birds 114: 723-747

HER/ Designation Ref	Name	Description	Easting	Northing	Period	Status	Importance	Setting Screening Assessment
SM441	Clach Clais an Tuire, standing stone 1000m SE of Loanscorribest	Prehistoric ritual and funerary: standing stone	299160	963166	Prehistoric	Scheduled Monument	High	**Wider landscape setting of asset contributes to significance. Impact possible in principle.** Clach Clais an Tuirc is a quadrangular standing stone. Screened by topography to the west with no views to site. **No Impact**
SM421	Achvarasdal House, two stones N of	Prehistoric ritual and funerary: standing stone	298332	964729	Prehistoric	Scheduled Monument	High	**Wider landscape setting of asset contributes to significance. Impact possible in principle.** Two monoliths which have evidently been standing stones at one time lie fallen some 60 yds NE of the garden at Achvarasdal Lodge. Located c.2km north-east of the Application Boundary within the grounds of Achvarasdal House. On low lying ground close to Sandside Bay. Landscape that contributes to significance includes the surrounding fertile land. moorland to the south-west not part of this landscape. Stones also screened by mature woodland surrounding the house. Also screened by topography to the south with no views to site. **No Impact**
SM514	Achvarasdal House, broch 65m NE of	Prehistoric domestic and defensive: broch	298352	964687	Prehistoric	Scheduled Monument	High	**Wider landscape setting of asset contributes to significance. Impact possible in principle.** Set in a large grassy mound are remains of a broch with the interior wall standing 1.7m high. Measuring 10m across the internal diameter, it has a chamber in NE segment and an entrance 0.9m wide in SE, where the width of the broch wall can be seen as 4.1m. . The broch was re-scheduled by Historic Environment Scotland in 2016 to better reflect its position and area of interest/importance. Located c.2km north-east of the Application Boundary within the grounds of Achvarasdal House. On low lying ground close to Sandside Bay. Landscape that contributes to significance includes the

HER/ Designation Ref	Name	Description	Easting	Northing	Period	Status	Importance	Setting Screening Assessment
								surrounding fertile land. The moorland to the south-west is not part of this landscape. Broch also screened by mature woodland surrounding the house and screened by topography to the south with no views to Application Boundary. **No Impact.**
MHG13442	Aryline	Lime Kiln	299000	960880	PM	HER	Low	No Impact on asset significance anticipated
MHG13443	Aryleive	Settlement	299160	960550	PM	HER	Low	No Impact on asset significance anticipated
MHG13444	Creag Bheag	Settlement	298680	962680	PM	HER	Low	No Impact on asset significance anticipated
MHG13445	Achrasker	Settlement	299220	963590	PM	HER	Low	No Impact on asset significance anticipated
MHG13446	Clashmore	Township	299900	963060	PM	HER	Low	No Impact on asset significance anticipated
MHG13449	Milton	Settlement	297680	264140	PM	HER	Low	No Impact on asset significance anticipated
MHG13450	Little Rock	Stone Alignment; Cairn	297740	963480	Prehistoric	HER	Low	**Wider landscape setting of asset contributes to significance. Impact possible in principle.** Located 600m north-east of the Substation at the base of Little Rock. Lower slopes of Creag Leathan screen the asset from the Application Boundary**. No impact**
MHG1602	Hut circles - Sandside Burn	Hut Circle	296150	963410	Prehistoric	HER	Low	No Impact on asset significance anticipated
MHG1603	Hut Circle, The Knowe	Hut Circle	296460	964050	Prehistoric	HER	Low	No Impact on asset significance anticipated

HER/ Designation Ref	Name	Description	Easting	Northing	Period	Status	Importance	Setting Screening Assessment
MHG1604	Creag Leathan	Hut Circle Settlement; Clearance Cairn	298300	963310	Prehistoric	HER	Low	No Impact on asset significance anticipated
MHG1605	Hut Circle, Creag Leathan	Hut Circle	298450	963240	Prehistoric	HER	Low	No Impact on asset significance anticipated
MHG1607	Hut circle - Achins	Hut Circle	295930	963730	Prehistoric	HER	Low	No Impact on asset significance anticipated
MHG1608	Burnt Mound, Clashmore	Burnt Mound; Burial Cairn	299980	963140	Prehistoric	HER	Low	No Impact on asset significance anticipated
MHG1609	Creag Liath	Hut Circle; Lynchet; Field System	299640	963150	Prehistoric	HER	Low	No Impact on asset significance anticipated
MHG1610	Bothy and enclosure? - Creag Leathan	Hut Circle?; Bothy?; Enclosure?	298180	963310	Prehistoric	HER	Low	No Impact on asset significance anticipated
MHG16110	Aryleive	Building	299440	960450	PM	HER	Low	No Impact on asset significance anticipated
MHG16111	Aryleive	Farmstead	299010	960590	PM	HER	Low	No Impact on asset significance anticipated
MHG1613	Hut Circle, Achvarasdal Burn	Hut Circle	298920	963230	Prehistoric	HER	Low	No Impact on asset significance anticipated
MHG1614	Cairn, Creagan Liath	Cairn	298930	963980	Prehistoric	HER	Low	**Wider landscape setting of asset contributes to significance. Impact possible in principle.** In pasture ground, is a turf-covered cairn, 9m in diameter and 0.4m in general height. Located 1.5km north-east of

HER/ Designation Ref	Name	Description	Easting	Northing	Period	Status	Importance	Setting Screening Assessment
								the Application Boundary on low lying ground close to the Achavellan Burn and associated with the nearby prehistoric settlement. Asset screened from views towards the Application Boundary by Creag Leathan. **No Impact**
MHG1615	Site of Cairn, Big Keoltag	Cairn	299744	964690	Prehistoric	HER	Low	**Wider landscape setting of asset contributes to significance. Impact possible in principle.** A turf-covered, flat-topped cairn, reduced to 22m in diameter and 0.8m high. Located on a low rise at Little Keoltag close to the Burn of Isauld. Landscape that contributes to significance is the surrounding low lying fertile land towards the coastline. Views to Application Boundary screened by Borlum Rock and Little Rock. **No Impact**
MHG1616	Burnt Mound, Borag Knowe	Burnt Mound	297290	963020	Prehistoric	HER	Low	No Impact on asset significance anticipated
MHG1617	Burnt Mound, Borlum Rock	Burnt Mound	297390	963750	Prehistoric	HER	Low	No Impact on asset significance anticipated
MHG1619	Site of Possible Burial or Clearance Cairn, Little Rock	Burial Cairn; Clearance Cairn	297700	963490	Prehistoric	HER	Low	No Impact on asset significance anticipated
MHG17819	Aryleive	Building	298910	960880	PM	HER	Low	No Impact on asset significance anticipated
MHG17820	Milton	Township	297630	964090	PM	HER	Low	No Impact on asset significance anticipated

HER/ Designation Ref	Name	Description	Easting	Northing	Period	Status	Importance	Setting Screening Assessment
MHG17821	Borag Knowe	Farmstead	297350	963090	PM	HER	Low	No Impact on asset significance anticipated
MHG17822	Sandside Burn	Farmstead	296200	962320	PM	HER	Low	No Impact on asset significance anticipated
MHG18124	Achrasker	Farmstead	299210	963580	PM	HER	Low	No Impact on asset significance anticipated
MHG18454	Boundary Bank, Loanscorribest	Boundary Bank	298700	963990	PM	HER	Low	No Impact on asset significance anticipated
MHG19408	Possible Stone Circle, Beul an Lochain	Stone Setting; Stone Circle	299400	963800	Prehistoric	HER	Low	**Wider landscape setting of asset contributes to significance. Impact possible in principle.** Stone circle. Diameter: 17m. Circular setting of at least six irregularly shaped stones, showing through peat and heather. Located 2km east of Application Boundary. Not found during a pre afforestation survey. On low lying ground close to Achavellan Burn. Screened from Application Boundary by Creag Leathan and Creag Bheag. **No Impact**
MHG19431	Stone Rows, Borlum	Stone Alignment	297700	963400	Prehistoric	HER	Low	**Wider landscape setting of asset contributes to significance. Impact possible in principle.** Approximately 52 small stones sat in about 8 fan shaped rows converge towards a small mound of stones at the narrow end of the fan and some 12.5m distant. Located 600m north-east of the Substation at the base of Little Rock. Lower slopes of Creag Leathan screen the asset from the Application Boundary. **No impact**
MHG19442	Achrasker	Structure	298890	963490		HER	Low	No Impact on asset significance anticipated

HER/ Designation Ref	Name	Description	Easting	Northing	Period	Status	Importance	Setting Screening Assessment
MHG20213	Achrasker	Field System; Clearance Cairn	299190	963700	Prehistoric	HER	Low	No Impact on asset significance anticipated
MHG20214	Possible Standing Stone, Achrasker	Boundary Stone	298990	963540	Prehistoric	HER	Low	No Impact on asset significance anticipated
MHG20220	Sheepfold, Achvarasdal Burn	Sheep Fold	299160	963190	PM	HER	Low	No Impact on asset significance anticipated
MHG22026	Cnoc Dachow	Peat Cutting	296490	964500	PM	HER	Low	No Impact on asset significance anticipated
MHG22039	Aryleive Moss	Lime Kiln	299000	960870	PM	HER	Low	No Impact on asset significance anticipated
MHG2465	Scooped Settlement, Creag Leathan	Scooped Settlement	298150	963000	Undated	HER	Low	No Impact on asset significance anticipated
MHG2466	Hut Circle, Achvarasdal	Hut Circle	299100	962320	Prehistoric	HER	Low	No Impact on asset significance anticipated
MHG2467	Longhouse, Achvarasdal	Longhouse	299930	962230	Undated	HER	Low	No Impact on asset significance anticipated
MHG2468	Farmstead, Achvarasdal	Township; Head Dyke	299360	962060	PM	HER	Low	No Impact on asset significance anticipated
MHG2469	Platform, Creag Leathan	Platform	298290	963200	PM	HER	Low	No Impact on asset significance anticipated

HER/ Designation Ref	Name	Description	Easting	Northing	Period	Status	Importance	Setting Screening Assessment
MHG24974	Standing Stone - Achrasker	Standing Stone	299420	963510	Prehistoric	HER	Low	**Wider landscape setting of asset contributes to significance. Impact possible in principle.** A pre-afforestation survey recorded standing stone. Located 1.8km east of the Application Boundary on low lying ground 500 m north-east of SM441 now within forestry. Landscape that contributes to significance is the low-lying fertile land towards the north likely occupied by the communities that erected the stone. Possible views to Application Boundary but at nearly 2km they do not affect the understanding etc of the monument. **no impact**
MHG24975	Achrasker	Field System	299100	963100	PM	HER	Low	No Impact on asset significance anticipated
MHG24976	Brackside	Enclosure	299250	963970	PM	HER	Low	No Impact on asset significance anticipated
MHG24977	Little Rock	Hut Circle; Enclosure	297600	963500	Prehistoric	HER	Low	No Impact on asset significance anticipated
MHG25074	Blarmore	Boundary Bank; Cairn	299250	963740	PM	HER	Low	No Impact on asset significance anticipated
MHG25075	Blarmore	Cairn	299300	963650	Prehistoric	HER	Low	**Wider landscape setting of asset contributes to significance. Impact possible in principle.** Two isolated cairns, mostly heather covered, but with some stone exposed. Approximate diameters 2-3m. Located 1.8km north-east of the Application Boundary within an alre of low lyiing ground overlooking the Achavellan Burn. Screened from Application Boundary by Creag Leathan. **No Impact**
MHG25076	Blarmore	Boundary Bank; Quarry	299100	963100	PM	HER	Low	No Impact on asset significance anticipated

HER/ Designation Ref	Name	Description	Easting	Northing	Period	Status	Importance	Setting Screening Assessment
MHG25098	Hut circle and field system - Achins	Hut Circle; Field System	295830	963440	Prehistoric	HER	Low	No Impact on asset significance anticipated
MHG25100	Reay	Farmstead	296540	964100	PM	HER	Low	No Impact on asset significance anticipated
MHG25101	Reay	Sheep Fold	296580	963940	PM	HER	Low	No Impact on asset significance anticipated
MHG25102	Helshetter	Structure	296890	963360	PM	HER	Low	No Impact on asset significance anticipated
MHG25103	Helshetter	Site	297090	963220	PM	HER	Low	No Impact on asset significance anticipated
MHG25104	Helshetter	Farmstead	297090	963220	PM	HER	Low	No Impact on asset significance anticipated
MHG25105	Borlum	Bridge	296820	963870	PM	HER	Low	No Impact on asset significance anticipated
MHG25106	Borlum House	Fank	297260	964050	PM	HER	Low	No Impact on asset significance anticipated
MHG35632	The Knowes	Site; Farmstead	296550	964100	PM	HER	Low	No Impact on asset significance anticipated
MHG35633	The Knowes	Site; Sheep Fold	296580	963940	PM	HER	Low	No Impact on asset significance anticipated
MHG35634	Reay Burn	Site; Clearance Cairn	296900	963370	Undated	HER	Low	No Impact on asset significance anticipated
MHG35635	Reay Burn	Site; Clearance Cairn	296970	963330	Undated	HER	Low	No Impact on asset significance anticipated

HER/ Designation Ref	Name	Description	Easting	Northing	Period	Status	Importance	Setting Screening Assessment
MHG35636	Reay Burn	Site; Farmstead	297100	963220	PM	HER	Low	No Impact on asset significance anticipated
MHG35638	Borlum House	Sheep Fold	297260	964050	PM	HER	Low	No Impact on asset significance anticipated
MHG35639	Milton	Site; Cruck House	297630	964080	PM	HER	Low	No Impact on asset significance anticipated
MHG36697	Achvarasdal House	House	298320	964630	PM	HER	Low	No Impact on asset significance anticipated
MHG36698	Achvarasdal Home Farm	Farm	298080	964780	PM	HER	Low	No Impact on asset significance anticipated
MHG36750	Borlum House	House	297150	964120	PM	HER	Low	No Impact on asset significance anticipated
MHG37237	Milton, General	Site	297750	964260	PM	HER	Low	No Impact on asset significance anticipated
MHG39401	Enclosure, Creagan Liath	Enclosure	299010	963880	PM	HER	Low	No Impact on asset significance anticipated
MHG39403	Possible linear clearance cairn - Achins	Linear Clearance Cairn?	296050	963370	Prehistoric	HER	Low	No Impact on asset significance anticipated
MHG39404	Hut circle - Achins (A)	Hut Circle	296000	963520	Prehistoric	HER	Low	No Impact on asset significance anticipated
MHG39405	Hut circle and enclosure - Achins	Hut Circle; Enclosure	296080	963500	Prehistoric	HER	Low	No Impact on asset significance anticipated

HER/ Designation Ref	Name	Description	Easting	Northing	Period	Status	Importance	Setting Screening Assessment
MHG39407	Clearance Cairns, Achrasker	Clearance Cairn	299210	963250	Prehistoric	HER	Low	No Impact on asset significance anticipated
MHG39408	Enclosure, Borag Knowe	Enclosure	297510	962930	PM	HER	Low	No Impact on asset significance anticipated
MHG39409	Possible clearance cairn, Borag Knowe	Clearance Cairn?	297530	962950	Prehistoric	HER	Low	No Impact on asset significance anticipated
MHG39410	Hut circle - Borag Knowe	Hut Circle	297490	962900	Prehistoric	HER	Low	No Impact on asset significance anticipated
MHG39411	Enclosure, Little Rock	Enclosure	297690	963500		HER	Low	No Impact on asset significance anticipated
MHG39416	Hut circle - Claperon	Hut Circle	297240	962950	Prehistoric	HER	Low	No Impact on asset significance anticipated
MHG39417	Mounds or shieling huts – Achins	Mound; Shieling	296040	963390	Undated	HER	Low	No Impact on asset significance anticipated
MHG39418	Hut circle - Achins (B)	Hut Circle	296060	963450	Prehistoric	HER	Low	No Impact on asset significance anticipated
MHG39420	Clearance cairn - Achins	Clearance Cairn	290020	963570	Undated	HER	Low	No Impact on asset significance anticipated
MHG39688	Burnt Mounds or Cairns - Achrasker	Burnt Mound; Cairn	298890	963540	Prehistoric	HER	Low	No Impact on asset significance anticipated

HER/ Designation Ref	Name	Description	Easting	Northing	Period	Status	Importance	Setting Screening Assessment
MHG39838	Clearance Cairn, The Knowe	Clearance Cairn	296460	964050	Prehistoric	HER	Low	No Impact on asset significance anticipated
MHG40272	Achrasker	Field System	299220	963580	PM	HER	Low	No Impact on asset significance anticipated
MHG40273	Achrasker	Rig And Furrow	299220	963580	PM	HER	Low	No Impact on asset significance anticipated
MHG52535	Barns to the south of Borlum House, Reay	Barn; Farm Building; Crowstepped Gable; Enclosure	297235	964085	PM	HER	Low	No Impact on asset significance anticipated
MHG710	Possible Cairn, Broch or Homestead, Creag Leathan	Cairn; Broch	298450	963350	Prehistoric	HER	Low	**Wider landscape setting of asset contributes to significance. Impact possible in principle.** The mutilated remains of a feature that has been variously described as a cairn, broch and homestead. Probably a Broch, located on the north facing slope of Creag Leathan overlooking the low-lying fertile land. No views towards the Application Boundary. **No Impact**
MHG712	Mill of Milton	Watermill	297850	964840	PM	HER	Low	No Impact on asset significance anticipated
MHG716	Hut Circle, Creagan Liath	Hut Circle; Bothy	299010	963890	Prehistoric	HER	Low	No Impact on asset significance anticipated
MHG718	Possible Burial or Clearance Cairn, Torran Dubh	Cairn	297840	964670	Prehistoric	HER	Low	**Wider landscape setting of asset contributes to significance. Impact possible in principle.** Mound which could be the remains of a burial cairn or clearance cairn. Located on a small mound 1.8km north of the Application Boundary overlooking the Burn of Isauld to the north-east. Landscape that contributes to

HER/ Designation Ref	Name	Description	Easting	Northing	Period	Status	Importance	Setting Screening Assessment
								significance is the surrounding low lying fertile land close to the coast. Screened from Application Boundary by hills to the south. **No Impact**
MHG719	Pottery Sherds - Reay Links	Findspot	296000	963990	Prehistoric	HER	Low	No Impact on asset significance anticipated
MHG722	Broch - Achvarasdal House	Broch	298340	964680	see SM	HER	Low	No Impact on asset significance anticipated
MHG723	Hut Circle, Borlum Rock	Hut Circle	297480	963490	Prehistoric	HER	Low	No Impact on asset significance anticipated
MHG724	Possible Scooped settlement, Creag Leathan	Scooped Settlement	298050	963150	Undated	HER	Low	No Impact on asset significance anticipated
MHG726	Enclosure - Achins	Enclosure	296050	963380	PM	HER	Low	No Impact on asset significance anticipated
MHG727	Enclosure - Achins	Enclosure	296000	963630	PM	HER	Low	No Impact on asset significance anticipated
MHG729	Cairn, Creag Liath	Cairn	299670	963040	Prehistoric	HER	Low	**Wider landscape setting of asset contributes to significance. Impact possible in principle.** This cairn (NMRS, MS 738/25, no.1), which measures 11m in diameter and stands over 1m in height. Situated on a north facing slope 1.5km north-east of the Application Boundary. No views to the Application Boundary. **No Impact**
MHG730	Possible Burial or	Cairn	299580	963180	Prehistoric	HER	Low	**Wider landscape setting of asset contributes to significance. Impact possible in principle.**

HER/ Designation Ref	Name	Description	Easting	Northing	Period	Status	Importance	Setting Screening Assessment
	Clearance Cairn, Creag Liath							Heather-covered mound that may be a burial cairn or clearance cairn. Situated on a north facing slope 1.5km north-east of the Application Boundary. No views to the Application Boundary. **No Impact**
MHG731	Burnt Mound - Achrasker	Burnt Mound	299280	963280	Prehistoric	HER	Low	No Impact on asset significance anticipated
MHG732	Hut Circle - Achrasker	Hut Circle	299210	962360	Prehistoric	HER	Low	No Impact on asset significance anticipated
MHG733	Hut Circles, Creagan Liath	Hut Circle	299000	964000	Prehistoric	HER	Low	No Impact on asset significance anticipated
MHG734	Hut circle, Borlum Rock	Hut Circle	297480	963470	Prehistoric	HER	Low	No Impact on asset significance anticipated
MHG737	Standing Stone, Clach Clais an Tuirc	Standing Stone	299150	963160	see SM	HER	Low	No Impact on asset significance anticipated
MHG738	Possible cairn, Borag Knowe	Cairn	297500	962930	Prehistoric	HER	Low	**Wider landscape setting of asset contributes to significance. Impact possible in principle.** The 'circle of stones' on the summit (A on plan) appears to be a cairn surviving as a low pile of rubble stones, much disturbed and containing the footings of a crude later structure. Located 350m north od the Substation close to Borag Knowe**. Impact not significant**
MHG739	Enclosure, Claperon	Enclosure	297260	962970	PM	HER	Low	No Impact on asset significance anticipated
MHG740	Enclosure, Reay Burn	Enclosure	297150	963010	PM	HER	Low	No Impact on asset significance anticipated

HER/ Designation Ref	Name	Description	Easting	Northing	Period	Status	Importance	Setting Screening Assessment
MHG741	Hut Circle, Little Rock	Hut Circle	297690	963500	Prehistoric	HER	Low	No Impact on asset significance anticipated
MHG742	Probable Kerb Cairn, Little Rock	Kerb Cairn	297630	963700	Prehistoric	HER	Low	**Wider landscape setting of asset contributes to significance. Impact possible in principle.** There is a small cairn 6m in diameter and 0.5m high. On SW periphery a kerb about 0.2m high is clearly visible. Located 500m north of the Application Boundary on the north facing slope of Little Rock. Screened from views to Application Boundary by topography. **No Impact**
MHG743	Field Boundary, Borlum Rock	Field Boundary	297610	963500	PM	HER	Low	No Impact on asset significance anticipated
MHG744	Hut Circles - Reay Burn	Hut Circle	296730	963530	Prehistoric	HER	Low	No Impact on asset significance anticipated
MHG42427	Enclosure - Sandside Burn	Enclosure	296120	963390	PM	HER	Low	No Impact on asset significance anticipated
MHG58965	Enclosure - Sandside Burn	Enclosure	296200	963450	PM	HER	Low	No Impact on asset significance anticipated
MHG58966	Enclosure - Achins	Enclosure	296070	963370	PM	HER	Low	No Impact on asset significance anticipated
MHG41655	Field system - Achins	Field System; Lynchet; Clearance Cairn	295920	963840	Prehistoric	HER	Low	No Impact on asset significance anticipated
MHG60608	Circular feature, possible	Henge?	297220	963850	Prehistoric	HER	Low	**Wider landscape setting of asset contributes to significance. Impact possible in principle.**

HER/ Designation Ref	Name	Description	Easting	Northing	Period	Status	Importance	Setting Screening Assessment
	henge - S of Reay							The feature is visible on vertical APs dating to 1999-2001 and 2009. It is approximately 47m in diameter and appears to be formed from a ditch between 2 and 3m in width with the suggestion of an external bank. Located 600m north of the Application Boundary across low lying fertile land. Screened from the Application Boundary by Borlum Rock. **No Impact.**

Technical Appendix 9.1: Peat

Introduction

This Technical Note provides a summary of the findings of a peat desk study and peat walkover survey undertaken on the 15th May 2025 to identify peat character at the Proposed Development and inform an assessment of peat impacts.

Desk Study

Carbon and Peatland Map 2016

Peatland classification mapping (shown on **Figure 9.3**) indicates that the majority of the Proposed Development including the existing substation and proposed BESS are underlain by Class 1 peatland. These are described as potentially nationally important carbon-rich soils, deep peat and priority peatland habitat in areas likely to be of high conservation value.

A small extent of the proposed underground cable route is also shown to be underlain by Class 2 peatland, which are also considered to be potentially nationally important carbon-rich soils, deep peat and priority peatland habitat with conservation value and restoration potential.

Geological and Soils Mapping

An extract of 1:250,000 National Soil Map of Scotland is shown on **Figure 9.1** and illustrates that site is underlain by three main soil types; mineral podzols along the northern extent of the existing access track, peaty podzols to the north west, including the proposed substation extension, and peat to the south east, including the proposed BESS site. The majority of the proposed underground cable route is shown to be underlain by peaty podzols.

An extract of BGS superficial deposit mapping, as shown on **Figure 9.2**, indicates that majority of the proposed underground cable route and the proposed BESS is underlain by glacial till deposits of the Thormaid Till Member, which is made up of a diamicton with clasts of Caledonian igneous and Moine metamorphic rocks. Peat superficial deposits are shown in the northern extent of the Proposed Development, including the proposed substation extension.

An extract of the BGS bedrock and linear features geology mapping is shown in **Figure 9.4**. The northern extent of the Proposed Development, including the proposed substation extension, is underlain by igneous rocks of the Strath Halladale Granite which comprises biotite granites. The southern extent of the Proposed Development, including the majority of the proposed underground cable and the proposed BESS is underlain by sedimentary rocks of the Tobaireach Conglomerate member.

Peat Probing Data

Access Track

Existing forest/windfarm tracks will be used – no new tracks are required.

BESS Footprint and Cable Route

Previous probing in the area (Technical Appendix 13A Limekiln Wind Farm Section 36C Variation Application 2021) of the former construction compound for the consented Limekiln Windfirm shows the area of the BESS (Blue Crosshatch) to consist of soils with a depth of less than 0.5m. See Plate 1.

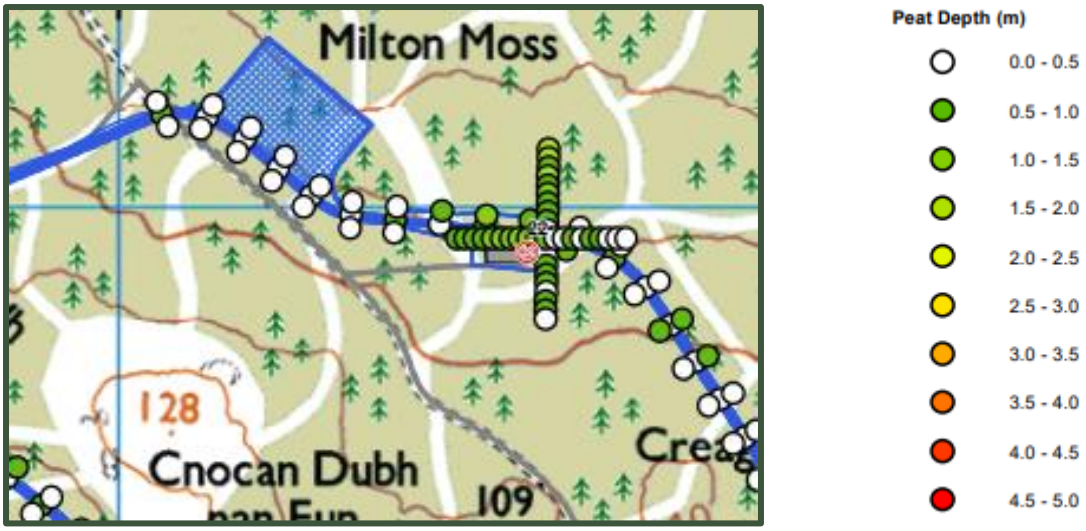

Plate 1 - Previous probing shows soils <0.5m (white circles) adjacent to the proposed BESS

Substation Extension

Previous probing in the area (Technical Appendix 13A Limekiln Wind Farm Section 36C Variation Application 2021) prior to the construction of the substation area show peat depths ranging from 0-2m in the area of the proposed substation extension (**Plate 2).**

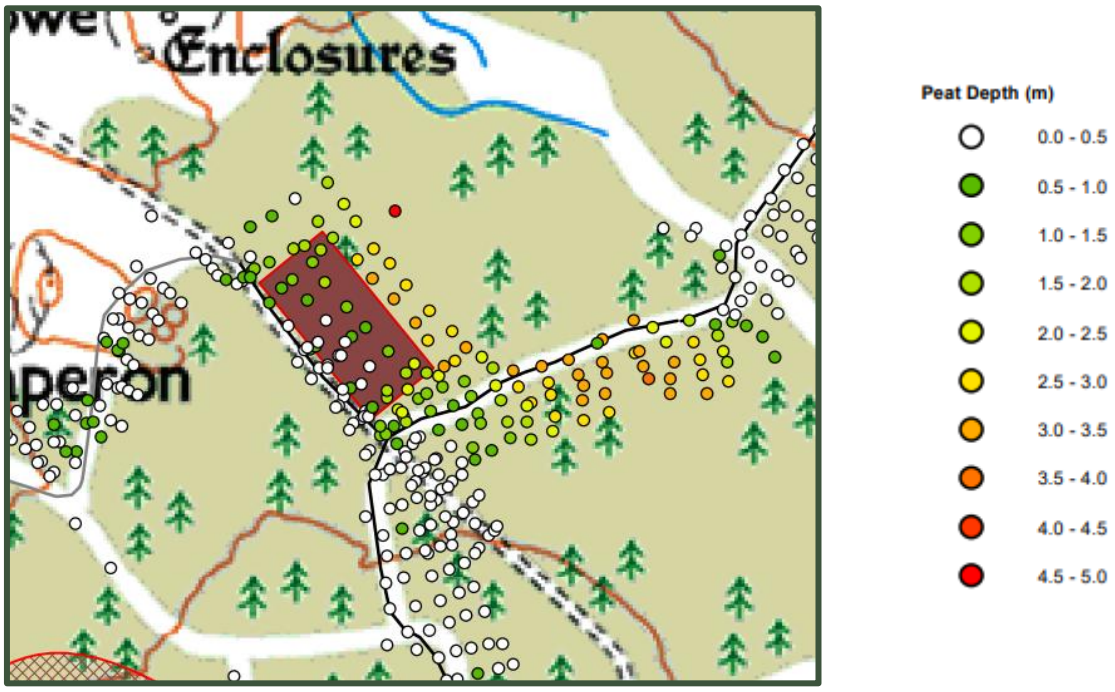

Plate 2 - Previous peat probing showing peat depth prior to substation construction[1].

[1] Technical Appendix 13B Peat Landslide Hazard Risk Assessment (PLHRA) of the Limekiln Wind Farm Section 36C Variation Application 2021

Peat Landslide Risk Assessment

In Technical Appendix 13B Peat Landslide Hazard Risk Assessment (PLHRA) of the Limekiln Wind Farm Section 36C Variation Application 2021) the entirety of the Proposed Development lies within the negligible risk category. Given the minimal changes since this time it is unlikely that peat landslide risk has changed, especially given much of the Proposed Development lies on mineral soils. As such this previous analysis is considered sufficient to scope out peat landslide risk as a significant risk at the Proposed Development.

Walkover Survey

BESS Footprint

The walkover survey conducted on the 15th of May 2025 confirmed previous probing results associated with the assessments for the Limekiln Windfarm and the absence of organic rich soils in the area of the proposed BESS. The entire area was unvegetated with exposed soils comprising mixed sand and silt with occasional rocky clasts corresponding with the till deposits indicated by BGS mapping **(Photo 1).** The absence of peat on the walkover survey also negates any modelled distribution of peat soils shown in the Carbon and Peatland Map 2016 and soil mapping in the area. Consequently further peat probing was not considered necessary within this area and peat impacts are absent.



Photo 1 - Area of Proposed BESS showing extensive mineral soils over the entire footprint

Access Track

As with the BESS development area, the walkover survey conducted on the 15th of May 2025 confirmed previous peat probing results associated with assessments for the Limekiln Windfarm. The access from the existing tracks to the BESS development area lies on exposed

mineral soil and therefore further investigation was not considered necessary. All other proposed tracks are pre-existing and do not require further upgrading, as such further investigation is also not considered necessary and peat impacts of the proposed development are negligible.

Cable Route

As with the BESS development area, a walkover survey conducted on the 15th of May 2025 confirmed previous peat probing results presented in support of the Limekiln Windfarm. The route of the proposed cable trenching comprised mineral soils similar to those observed within the Proposed BESS development area with thin organic rich soils (<0.1m) in some wetter areas **(Photo 2)**. This was true of the entire route with the exception of the area of access track and carparking associated with the existing substation and an area of made ground to the east of the substation comprising a mix of mineral, peat soil and cobble to boulder sized rock clasts **(Photo 3 and 4).** Given the majority of the route lies on mineral soils or made ground the potential to impact deposits is negated.



Photo 2 - Exposed Soil Profile adjacent to the Core path along the Proposed Cable Route showing a thin layer of organic soil overlying mineral soil. This is typical of the soils present up to the Control Building/Substation

Substation Extension

The proposed substation extension lies on an area of unvegetated made ground comprising a mixture of peat, mineral and bedrock fragments (Cobble to boulder sized) forming a verge around the edge of the existing substation **(Photo 3 & 4)** and formed during forestry activities (ploughing and forest road construction. This represents a peaty spoil with disrupted peat structure and contamination by large rock fragments **(Photo 4)** which is ubiquitous across to the east of the existing substation. All made ground is considered suitable for restoration works post development as has been applied at the existing substation. Consequently due to the highly disrupted nature of soils in this area it is considered peat impacts are largely avoided.



Photo 3 – Soil profile of made Ground comprising mixed organic rich soils, mineral soils and underlying bedrock overlying mineral soil in proposed substation extension area.



Photo 4 – Made ground consisting mixed peat soil, mineral soil and underlying bedrock in proposed substation extension area

Summary and Conclusions

A visual inspection of the site on the 15th May 2025 identified a formerly forested site dominated by mineral soils within the area of the proposed BESS and cable route. The area around the proposed substation extension whilst formerly on peat is predominantly comprised of made ground composed of a complex mix of mineral soils, peat soils and rock fragments across the footprint of the proposed substation extension.

Examination of the wind farm PLHRA indicates a negligible risk of peat landslide within the Proposed Development.

Following the peat survey, in accordance with National Planning Framework 4 (NPF4) mitigation hierarchy and NatureScot guidance of avoid, minimise, restore and offset the design of the Proposed Development it has been confirmed that no element of the Proposed Development lies on peat. Consequently, peat impacts are considered to have been avoided.

In the case of the substation extension the made ground presents a mixed peat spoil from past land-use on the site that be beneficially reused in restoration works on site.

SLR Consulting Limited

[redacted]

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